

Effectiveness of Lemon Essential Oil of Aromatherapy in Reducing Test Anxiety in Nursing Students

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Methods

Context and Characteristics: A randomized, pre-test-post-test design was carried out to examine the effectiveness of lemon essential oil in reducing test anxiety in first-year students of the Faculty of Medical Sciences of a private university in Istanbul.

Universe and Sample: The universe of the study consists of first-year students of the Faculty of Medical Sciences of a private university in Istanbul (N=54), with active registration records at the university as of January 2020.

The sample included students who met the inclusion criteria (N=48) from among the students who agreed to participate in the study after it was announced. The randomisation of the study sample group was conducted through block randomisation. In the study, since the student names are available in the class lists, students are randomly assigned to the groups using the numbers table in this list with the help of the computer. The blocks were randomly selected and this procedure continued until all subjects to be included in the study were assigned to the groups. At the end of this procedure, the number of students in the groups was equalized and twenty-four students each were assigned to the intervention and control groups. Since two of the students in the intervention group did not want to participate in the study, they left the study without handing in their pre-test forms.

Inclusion and Exclusion Criteria: The inclusion criteria included not having a respiratory system disease (asthma, flu, etc.), known allergic reaction to the essential oil to be used, allergy to any smell, pregnancy, epilepsy, inability to smell or inhale, not using any medication that might affect heart rate and blood pressure, not practicing other complementary medical practices (yoga, meditation, aromatherapy, massages, etc.), volunteering to participate in the study.¹⁰⁻¹² Students determined to have an anxiety disorder, disease, allergic reaction in question, a recent stressful history or a disability condition that is thought to be effective on the results of the study were excluded in the study.

Data Collection Tools

The data were collected through the personal information form, State Test Anxiety Scale (STAS) and Test Anxiety Schedule (TAS).

Personal Information Form

The personal information form contained nine questions on age, gender, education level, profession, place of residence, socio-economic status and success level at school (According to the grade point average).

Test Anxiety Scale (TAS)

Developed by Bozkurt (2019), the scale evaluates the degree of anxiety students feel before a test on a scale of 0 to 10. A score of 0 indicates no anxiety, while a score of 10 indicates severe anxiety.³⁵

State Test Anxiety Scale

Developed by Şahin in 2019, this scale determines students' anxiety levels before a test. It is a 4-point Likert-type scale consisting of three sub-dimensions and 22 items. The cognitive dimension consists of nine items (3, 4, 7, 9, 14, 16, 18, 20, 22), wherein the lowest possible score is nine and the highest score is 36. The psychosocial dimension consists of five items (6, 10, 12, 13, 21), wherein the lowest possible score is 5 and the highest score is 20. The physiological dimension includes eight items (1, 2, 5, 8, 11, 15, 17, 19), wherein the lowest possible score is 8 and the highest score is 32. Possible scores on the scale ranged between 22 and 88. There were no reverse items on the scale. A high score on the sub-dimensions and the whole scale indicates high level of anxiety. Cronbach's alpha coefficients of the scale were 0.93 for the cognitive sub-dimension, 0.84 for the psychosocial sub-dimension, 0.85 for the physiological sub-dimension and 0.94 for the whole scale.³ Cronbach's alpha coefficient in this study was 0.78 for the cognitive sub-dimension, 0.82 for the psychosocial sub-dimension, 0.87 for the physiological sub-dimension and 0.91 for the whole scale.

Application of Data Collection Tool

The study was carried out prior to an anatomy examination, which was the most concerning for the students according to their expressions. The pretest personal information form, STAS and TAS data collection tools were administered to all students in the study in a different exam room. Students in the control group were taken to the exam room prepared for them and were told that there would be no study application other than administering the data collection forms. Anything related to aromatherapy that can affect the process was not told to the students. Next, students in the intervention group who agreed to participate in the study were informed about the aromatherapy method to be used. Students in the intervention group were taken to the exam room specially prepared for them. After waiting for 15 minutes in the exam room for the aromatherapy administered through inhalation to take effect in the intervention group, the post-test STAS and TAS data collection tools were administered.

There was no intervention for the students in the control group. The study was carried out on the basis of the application made at the universities during the exam periods of the students. At the universities where the students study, 15 minutes before the exam, the students are taken to the class, the seating arrangement is provided and information is given about the exam rules. This is a standard practice for all students. Since the study was conducted according to this application, after waiting 15 minutes in the exam hall, post-test STAS and TAS data collection tools were administered.

Intervention

The exam rooms were cleaned and adequately ventilated before the administration. Students in the intervention and control groups were taken to two separate exam rooms with the same size and physical features. The intervention group was placed in a classroom where the doors and windows were shut 30 minutes prior to the test, and an oil diffuser was placed to diffuse the fragrance. The oil diffuser was placed 30 cm away from the students, and five (5) drops of essential lemon essential oil (diluted with 100cc distilled water) were placed inside the diffusing chamber. To ensure homogeneity of the fragrance in the air, the diffuser was activated 15–20 minutes before the intervention group was taken to the exam room. Furthermore, three drops of lemon essential oil were applied to non-absorbent napkins before the students were taken to the exam room. These napkins were placed on the students' collars, and the intervention group was taken to the examination hall. Students in the intervention group were asked to inhale the lemon essential oil in the examination hall for 15 minutes.¹⁰⁻¹² Students are admitted to the class 15 minutes before the exams in the practice carried out during the exam period at the university where the research is conducted. In the study, a 15-minute application period was determined by taking both the relevant studies and this exam application.

Fifteen minutes later, the STAS and TAS data collection tools were administered to the intervention group. The data collection tools took approximately five minutes to fill out, and the researchers recollected them after completion. After the data collection tools were retrieved, the oil diffuser and napkins placed on the students' collars were removed from the exam room, following which the test commenced.

To prevent cross-contamination, the students in the control group were taken to a cleaned and ventilated exam room located away from the students in the intervention group. After waiting for 15 minutes in the exam room, STAS and TAS data collection tools were administered. The data collection tools took approximately five minutes to fill out, and the researchers recollected them after completion, following which the test commenced. Lemon essential oil was used as the aromatic oil in this study administration.

Variables

The independent variable in this study was lemon essential oil, and the dependent variables were STAS and TAS. Lemon essential oil was obtained from a company that has safety, quality and approval certificates from the Turkish Ministry of Health. This oil, which does not contain any artificial preservatives, is derived from lemon peels using the mechanical process of cold pressing.

Data Analysis

The descriptive statistics were shown through numbers and percentages, while the pretest and post-test data were shown through mean scores and standard deviation values in the analysis of the data. The Wilcoxon test, Student T-test, Mann Whitney U-test and Spearman's correlation analysis were used. A simple linear regression analysis was used to determine the effect of the independent variable on the dependent variable. The data were analysed on a computer using SPSS 22. The statistical significance level was set as $p < 0.05$.

Ethical Dimension

An approval (No. 2020/1) was obtained from the Ethics Committee of the University where the study was conducted, and written permission was obtained from the institution where the study would be carried out. Moreover, written and verbal consent was obtained from the participants after explaining the purpose of the study. The written permission was also obtained from the researcher who conducted the Turkish validity and reliability study of the scale.